

Sharnbasva University, Kalaburagi
Scheme of Teaching and Examination 2018-19
Outcome Based Education(OBE) and Choice Based Credit System (CBCS)
(Effective from the academic year 2018-19)
I / II SEMESTER B.Tech (Physics Group)

Sl.No	Course Code	Course Title	Teaching Dept. & Paper Setting Board	Teaching Hours/week		Examination				Credits
				T	P	Duration in hours	CIE Marks	SEE Marks	Total Marks	
1	18MAT11/21	Engineering Mathematics-	Mathematics	4		3	50	50	100	04
2	18PHY12/22	Engineering Physics	Physics	4		3	50	50	100	04
3	18CIV13/23	Elements of Civil Engineering	Civil Engineering	3		3	50	50	100	03
4	18MES14/24	Elements of Mechanical Engineering	Mechanical Engineering	3		3	50	50	100	03
5	18PPS15/25	Programming for Problem Solving	Computer Science & Engineering	3		3	50	50	100	03
6	18PHYL16/26	Engineering Physics Lab	Physics		2	3	50	50	100	01
7	18CPL17/27	Computer Programming Lab	Computer Science & Engineering		2	3	50	50	100	01
8	18PC18/28	Professional Communication Lab	Humanities		2	2	50	50	100	01
9	18PROJ19/29	Project I/II	--		2	2	50	50	100	01
Total				17	8	25	450	450	900	21

I / II SEMESTER B.Tech (Chemistry Group)

Sl.No	Course Code	Course Title	Teaching Dept. & Paper Setting Board	Teaching Hours/week		Examination				Credits
				T	P	Duration in hours	CIE Marks	SEE Marks	Total Marks	
1	18MAT11/21	Engineering Mathematics	Mathematics	4		3	50	50	100	04
2	18CHE12/22	Engineering Chemistry	Chemistry	4		3	50	50	100	04
3	18ELN13/23	Basic Electronics Engineering	Electronics & Communication Engineering	3		3	50	50	100	03
4	18ELE14/24	Basic Electrical Engineering	Electrical & Electronics Engineering	3		3	50	50	100	03
5	18CEDL15/25	Computer Aided Engineering Drawing	Mechanical Engineering	1	4	3	50	50	100	03
6	18CHEL16/26	Engineering Chemistry Lab	Chemistry		3	3	50	50	100	01
7	18EECL17/27	Electronics & Electrical Lab	Electronics & Communication Engineering		3	3	50	50	100	01
8	18ES18/28	Environmental Studies	Civil Engineering	1		1	50	50	100	AC *
9	18PROJ19/29	Project I/II	--		2	2	50	50	100	01
Total				16	12	25	450	450	900	20

*Audit Course

MODULE - 1

Oscillations and Waves

Free Oscillations : Definition of SHM, derivation of eqn for SHM, Mechanical and electrical simple harmonic oscillators (mass suspended to spring oscillator). Equation of motion for free oscillations, Natural frequency of oscillations.

Damped and forced oscillations : Theory of damped oscillations : over damping, critical & under damping, quality factor. Theory of forced oscillations and resonance, sharpness of resonance. One example for mechanical resonance.

Shock Waves : Mach number, Shock Waves. Laws of conservation of mass, energy and momentum. Construction and working of Reddy shock tube, applications of shock waves.

Numerical Problems.

MODULE - 2

Elastic Properties of Materials :

Elasticity : Concept of elasticity, plasticity, stress, strain, tensile stress, shear stress, compressive stress, Hooke's Law, different elastic moduli, Poisson's ratio, Expression for Young's modulus (Y), Bulk modulus (K) & Rigidity modulus (n) in terms of α & β . Relation between Y, n & K, limits of Poisson's ratio.

Bending of beams : Derivation of expression for bending moment. Single Cantilever, derivation of expression for Young's modulus.

Torsion of Cylinder : Expression for couple for unit twist of a solid cylinder (Derivation), Torsional pendulum – Expression for period of oscillation.

Numerical Problems.

Ramachandran
Shree

Abhishek

Pratik
Aditya

Aravind

Aravind

MODULE - 3

Optical Fibers, EM Waves and Maxwell's equation

Optical Fibers : Propagation Mechanism, angle of acceptance. Numerical aperture. Modes of Propagation & types of optical fibers, attenuation mechanisms, attenuation coefficient (qualitative), discussion of block diagram of point to point of communication system. Applications of optical fibers.

Maxwell's equation : Fundamentals of vector calculus, divergence & curl of electric field & magnetic field (static), Gauss divergence theorem & Stoke's theorem. Description of laws of electrostatics, Magnetism & Faraday's laws of EMI._

EM Waves : The wave eqn in differential form in free space (qualitative), Plane EM waves in vaccum, there transverse nature, Polarisation of EM waves (qualitative).

Role of Dielectrics : Dielectrics, Mention of solid, liquid & gaseous dielectrics with one example each. Application of dielectrics in transformers.

Numerical Problems.

MODULE - 4

Quantum Mechanics and Lasers

Quantum Mechanics : Heisenberg uncertainty principle, applications (non-existence of electron in the nucleus), wave function, properties of wave function, time independent Schrodinger wave equation, particle in box, eigen values, eigen functions.

Lasers : Principles of lasers, Einstein's coefficients (derivation of expression for energy density). Requisites of laser system. Conditions for laser action. Construction & working of CO₂ & Semiconductor laser. Applications of laser in defence (Laser range finder) & Engineering (data storage).

Numerical Problems.

Handwritten signatures:
Ramesh Kumar
N. Nagaraj

Handwritten signatures:
R. Ravi
B. Ravi
A. Ravi
R. Ravi

MODULE - 5

Materials Science

Free electron theory of metals : Free electron concept (mean free path, mean collision time, drift velocity, relaxation time), assumptions of classical free electron theory, Mention the expression for electrical conductivity for classical free electron theory , failures of classical free electron theory, assumptions of quantum free electron theory, expression for quantum free electron theory, success of quantum free electron theory, Fermi energy, Fermi factor, dependence of Fermi factor on temperature.

Semiconductor Physics : Expression for concentration for electrons in conduction band, Hole concentration in valence band (only mention the expression), Expression for electrical conductivity in intrinsic semiconductor, Hall effect.

Nanomaterials : Quantum structures (0-D, 1-D, 2-D), Carbon nanotubes, structure of CNT's

Numerical Problems.

[Handwritten signatures and marks]

Engineering Physics Lab external Lab

Examiners details:

Prof. Ravansiddappa

Lingkarajappa Engg.

College Bidar

E-mail: rsiddpa8@gmail.com

Prof. Vikram Patil

Shetty Engg. college

Kalburagi

ail: vikramfz@gmail.com

Prof. Satish Lature

PDA Engg. college

Kalburagi

-mail: Satishkumarlature@gmail.com

Prof. Dilip. M

Basavakalyan Engg college

Basavakalyan.

ail: mataled123@gmail.com

Prof. Prabhakar

Veerappa nischay Engg

Sherapur.

ail: p.n.patilo1@gmail.com

Course Title:	Engineering Physics Lab (Common for all Branches/Stream)		
Course Code:	22PHY18/28		
Course Type (Theory/Practical)	Practical	CIE Marks	50
		SEE Marks	50
Teaching Hours/Week (Practical)	02	Total Marks	100
		Exam Hours	02
Total Hours of Pedagogy	38 hrs	Credits	01

Course objectives

- To realize experimentally, the mechanical, electrical and thermal properties of materials, concept of waves and oscillations
- To design simple circuits and hence study the characteristics of semiconductor devices

List of Experiments

1. Determine Acceptance angle and Numerical aperture of an optical fiber.
2. Determine Wavelength of semiconductor laser using Laser diffraction by calculating grating constant.
3. Draw I-V characteristics of photodiode and calculate power responsivity.
4. Determination and Estimation of Fermi Energy of Copper.
5. Calculation of Dielectric constant by RC charging and Discharging.
6. Stefan's Law of radiation.
7. Determination of Planck's constant using Light Emitting Diodes.
8. Study of input and output Transistor characteristics and hence calculate input resistance, and output resistance.
9. n & I by Torsional pendulum (radius of the wire, mass and dimensions of the regular bodies to be given).
10. Young's modulus of a beam by Single Cantilever experiment.
11. Determination of spring constants in Series and Parallel combination.
12. Study Series and parallel LCR resonance and hence Calculate inductance, band width and quality factor using series LCR Resonance.
13. Young's modulus by uniform bending.
14. Study of I-V characteristics of Zener diode and determine the knee voltage and breakdown voltage.

Course Outcomes:

Upon completion of this course, students will be able to

- Apprehend the concepts of interference of light, diffraction of light, Fermi energy and magnetic effect of current
- Understand the principles of operations of optical fibers and semiconductor devices such as Photodiode, and NPN transistor using simple circuits
- Determine elastic moduli and moment of inertia of given materials with the help of suggested procedures
- Recognize the resonance concept and its practical applications
- Understand the importance of measurement procedure, honest recording and representing

the data, reproduction of final results

CIE for the practical component

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing marks for the CIE is 45% of the maximum marks (23 marks out of 50). The minimum passing marks for the SEE is 35% of the maximum marks (18 marks out of 50).

A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 35% (18 Marks out of 50) in the semester-end examination (SEE), and a minimum of 40% (40 marks out of 100) in the sum and total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

CIE for the practical component

- On completion of every experiment in the laboratory, the students shall be evaluated and marks shall be awarded on the same day.
- The 25 marks are for conducting the experiment and preparation of the laboratory record, 10 marks for individual evaluation (which includes viva voce), (the average of total experiments}
- The 15 marks shall be for the test conducted at the end of the semester, for the subject (duration of 1 hour 15 minutes)

SEE for the practical component

- SEE marks for the practical course is 50 marks
- All laboratory experiments are to be included for the practical exam
- Break up marks and the instructions printed on the cover page of the answer script to be strictly adhered to by the examiners
- Students can pick one question (experiment) from the questions lot prepared by the examiners
- General rubrics suggested for SEE are mentioned here write up 15%, conduction procedure and result is 70% and viva voce 10% of maximum marks.
- Practical SEE will be conducted by University as per the scheduled time table, for the subject (duration 02 hours).

Web links and Video Lectures (e-Resources):

<https://www.britannica.com/technology/laser.k>
<https://nptel.ac.in/courses/115/102/115102124/>
<https://nptel.ac.in/courses/115/104/115104096/>
<http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html>
https://onlinecourses.nptel.ac.in/noc20_mm14/preview

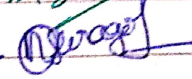
Activity Based Learning (Suggested Activities in Class)/ Practical Based learning :

- <http://nptel.ac.in> <https://swayam.gov.in>
- <https://www.vlab.co.in/participating-institute-amrita-vishwa-vidyapeetham>

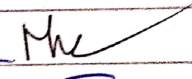
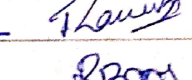
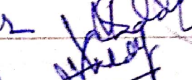
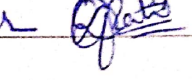
A meeting of Board of Studies (BOS) is conducted to
 1. Finalization of the choice based credit scheme (CBCS) for the post graduate course (M.Sc.)
 2. Finalization of scheme and evaluation of I, II, III and IV Semester for the M.Sc. physics course
 3. Finalization of syllabus of I, II, III, IV Semester for the M.Sc. physics course and B.Tech course
 on 12/08/2018 at 11:00 am in University Meeting Hall, Main building, Sharnbasva University, Kalaburagi

The following members were present in the meeting

Internal member

1. Dr. Anilkumar Bidve Chairman 
2. Dr. Nagbasavanna Huragot Member 

External member

1. Dr. M.V.N. Ambika Prasad Member 
2. Dr. Bharat Kumar Member 
3. Prof. Praveen B. Chavri Member 
4. Prof. Revansidappa Member 
5. Prof. Shivaleela Waddankeri Member 
6. Prof. Vidyalaxmi Reddy Member 
7. Prof. Danamma Hiremath Member 

The meeting resolved to accept the scheme and evaluation and syllabus proposed the department of physics, Faculty of Science and Technology, Sharnbasva University, Kalaburagi.

- ① Engg. Physics (18PHY12/22) for the B.Tech first year course as per CBCS was framed in the last meeting was held on 12/08/2018, but it was not finalised, today it is finalised with lot of deliberation and discussions during the meeting of the board of study in Engg. Physics for

approval and implementation from the academic year 2018-19 and onwards.

- 2) For Engg. Physics Lab (18PHYL16/26) in previous meeting only 06 experiments from each part and there are totally two parts, part A and B total 12 experiments were there but today BOS meeting it was unanimously decided that to add one expt to each part hence total expts are 14 (fourteen)

All 30/09/2018

- A meeting of Board of studies (BOS) is conducted to
1. Finalization of the choice based credit scheme (CBCS) for the post graduate course.
 2. Finalization of scheme and evaluation of I, II, III & IV Semesters for the M.Sc. physics Course.
 3. Finalization of syllabus of I, II, III & IV Semester for the M.Sc. physics Course.
- on 30/09/2018 at 11:00 am in University Meeting Hall, Main building, Sharnbasva University, Kalaburagi.

The following members were present in the meeting

Internal member

1. Dr. Anilkumar Bidve Chairman

2. Dr. Nagbasavanna Guragol Member

External member

1. Dr. M.V.N. Ambika Prasad Member

2. Dr. Bharat Kumar Member

3. Prof. Praveen B. Chokori Member

4. Prof. Revanasidappa Member

5. Prof. Shivaleela Waddankeri Member

6. Prof. Vijayalaxmi Reddy Member

7. Prof. Danamma Hiremath Member

The meeting resolved to accept the scheme and evaluation and syllabus proposed the department of physics, faculty of science and technology, Sharnbasva University, Kalaburagi.